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Pledge: I pledge my honor that I have abided by the Stevens Honor System

For each function below, trace through it with reasonably small integer values. What does each function do?
HINT: You should assume integers are 8 bits for the purpose of this exercise.

```
int mystery1(int a, int b) {
    int c = a - b,
        d = (c >> 7) & 1,
        mystery = a - c * d;
    return mystery;
}
```

Trace: mystery1(3, 7) returns **7**
Trace: mystery1(8, 7) returns **8**

Summary: **The function returns the max of the two arguments (argument a if $a \geq b$ and argument b if a < b)**

```
void mystery2(int values[], int i, int j) {
    values[i] = values[i] ^ values[j];
    values[j] = values[i] ^ values[j];
    values[i] = values[i] ^ values[j];
}
```

Note: Improper C++ syntax found below.
Trace: mystery2([1, 2, 3, 4], 0, 3) **values = [4, 2, 3, 1]**
Trace: mystery2([1, 2, 3, 4], 1, 2) **values = [1, 3, 2, 4]**

Summary: **The function swaps the values in index i and index j.**

```
int mystery3(int x, int y) {
    int s, c;
    s = x ^ y;
    c = x & y;
    while (c != 0) {
        c = c << 1;
        x = s;
        y = c;
        s = x ^ y;
        c = x & y;
    }
    return s;
}
```

Trace: mystery3(5, 7) returns **12**
Trace: mystery3(2, 8) returns **10**
Summary: **The function just adds the two arguments.**